

Enhanced Ground Control for ISS Robotics

Completed Technology Project (2012 - 2013)



Project Introduction

Investigate and adapt aides which will increase the efficiency of ISS robotics ground control operations. Initially focus on providing relative position feedback to the operator during close-proximity operations, like grasping a robotic interface for example, since this type of operation is one of the most inefficient from a ground-operator perspective. Will benefit ISS operations and provide a testbed for future telerobotic exploration systems that will save time for both the crew and the ground.

This project will investigate and adapt aides which will increase the efficiency of ISS robotics ground control operations with the intent of creating more opportunities for ground-controlled robotic operations. The selection and adaption of an aide will initially focus on providing relative position feedback to the operator during close-proximity operations, like grasping a robotic interface for example, since this type of operation is one of the most inefficient from a ground-operator perspective. This is to be a video-based system using Natural Feature Image Recognition (NFIR). The intent is to eventually use the same information to generate commands within the command system. This will benefit ISS operations and provide a testbed for future telerobotic exploration systems that will save time for both the crew and the ground.

Anticipated Benefits

The ultimate goal is for the aide to be used during real-time ISS robotic operations. The Robotics Officers from the Mission Operations Directorate (MOD), who are responsible for ISS robotic operations, are very interested in an aide to improve their efficiency and are prepared to use the aide during real-time operations.

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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission
Directorate (STMD)

Lead Center / Facility:

Johnson Space Center (JSC)

Responsible Program:

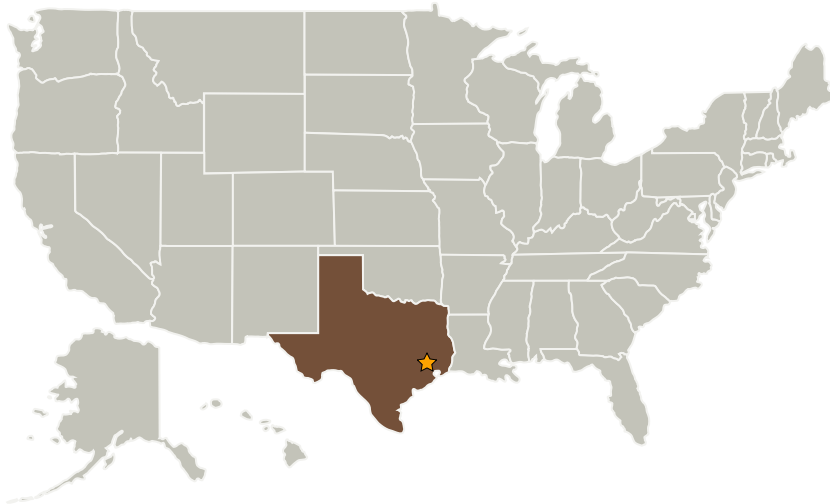
Center Innovation Fund: JSC
CIF

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Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★ Johnson Space Center(JSC)	Lead Organization	NASA Center	Houston, Texas
Jacobs Engineering Group, Inc.	Supporting Organization	Industry	Dallas, Texas

Primary U.S. Work Locations

Texas

Project Management

Program Director:

Michael R Lapointe

Program Manager:

Carlos H Westhelle

Project Manager:

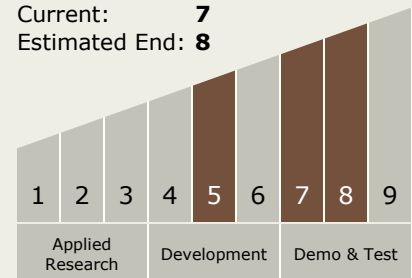
Michael D Wright

Principal Investigator:

Michael D Wright

Technology Maturity (TRL)

Start: 5
 Current: 7
 Estimated End: 8



Technology Areas

Primary:

- TX13 Ground, Test, and Surface Systems
 - └ TX13.4 Mission Success Technologies
 - └ TX13.4.4 Autonomous, Real-Time Command and Control